

WHAT IS CLAIMED IS:

- 1 1. A telecommunications network which transmits, in a broadcast channel over
2 an air interface, an access group eligibility message which enables a user equipment
3 unit which receives the access group eligibility message to ascertain, on a basis of
4 access group to which the user equipment unit belongs, whether the user equipment unit
5 is eligible to operate in a cell for which the access group eligibility message is
6 transmitted.

- 1 2. The apparatus of claim 1, wherein the access group eligibility message
2 indicates what subscriber groups are eligible to operate in the cell for which the access
3 group eligibility message is transmitted.

- 1 3. The apparatus of claim 1, wherein the access group eligibility message
2 indicates what restriction groups are not eligible to operate in the cell for which the
3 access group eligibility message is transmitted.

- 1 4. The apparatus of claim 1, wherein the access group eligibility message
2 includes a bitmap which indicates eligibility for plural access groups.

- 1 5. The apparatus of claim 1, wherein a radio access network node transmits the
2 access group eligibility message, and further comprising a core network node which,
3 upon receipt of a location update request for the user equipment unit, classifies the user
4 equipment unit in at least one of plural access groups and generates for transmission to
5 the user equipment unit through a radio access network an access group classification
6 message which advises the user equipment unit as to which of the plural access groups
7 the user equipment unit belongs.

- 1 6. The apparatus of claim 5, wherein the user equipment unit stores an access
2 group classification obtained from the access group classification message in a memory
3 at the user equipment unit.

- 1 7. The apparatus of claim 6, wherein the user equipment unit upon receiving the
2 access group eligibility message compares the stored access group classification with
3 contents of the access group eligibility message to determine whether the user

4 equipment unit is allowed access to the cell for which the access group eligibility
5 message is transmitted.

1 8. The apparatus of claim 7, wherein the access group eligibility message
2 includes a first bitmap which indicates eligibility for the plural access groups; wherein
3 the access group classification message includes a second bitmap which advises the
4 user equipment unit as to which of the plural access groups the user equipment unit
5 belongs.

6 9. The apparatus of claim 8, wherein the user equipment unit performs a logical
7 operation with respect to the first bitmap and the second bitmap to determine whether
8 the user equipment unit is allowed access to the cell for which the access group
9 eligibility message is transmitted.

10 10. The apparatus of claim 9, wherein the first bitmap indicates which of plural
11 subscriber groups are eligible and the second bitmap indicates to which one(s) of plural
12 subscriber groups the user equipment unit belongs, and wherein the logical operation is
13 a logical AND operation between corresponding bit positions of the first bitmap and the
14 second bitmap.

15 11. The apparatus of claim 9, wherein the first bitmap indicates which of plural
16 restriction groups are ineligible and the second bitmap indicates to which one(s) of
17 plural restriction groups the user equipment unit belongs, and wherein the logical
18 operation is a logical AND operation between corresponding bit positions of the first
19 bitmap and the second bitmap.

20 12. The apparatus of claim 7, wherein the user equipment unit is in one of an
21 IDLE mode and one of the following states of a CONNECTED mode: CELL_FACH
22 state; CELL_PCH state; and URA_PCH state.

23 13. The apparatus of claim 6, wherein upon entering a new cell which involves
24 a transition to a new location area, the user equipment unit checks the access group
25 eligibility message transmitted for the new cell in order to compare the stored access
group classification with contents of the access group eligibility message to determine
whether the user equipment unit is allowed access to the new cell.

1 14. The apparatus of claim 13, wherein upon entering a new cell which does not
2 involve a transition to a new location area, the user equipment unit need not check the
3 access group eligibility message to determine whether the user equipment unit is
4 allowed access to the new cell.

1 15. The apparatus of claim 1, wherein the access group classification message is
2 one of a location update response and a location update reject message which includes
3 the access group classification.

1 16. The apparatus of claim 1, wherein the access group classification message is
2 one of a location update response and a location update reject message which includes
3 the access group classification and a version field associated with the access group
4 classification.

1 17. The apparatus of claim 16, wherein upon receiving a subsequent core
2 network message in the form of one of a location update response or location update
3 reject message, the subsequent core network message including a potentially revised
4 access group classification and a version field associated with the access group
5 classification carried by the subsequent core network message, the user equipment unit
6 determines, by comparing contents of the version field associated with the access group
7 classification and the version field associated with the access group classification
8 carried by the subsequent core network message, whether the user equipment unit
9 should update its stored access group classification.

1 18. The apparatus of claim 6, wherein the access group classification message
2 generated by the core network includes the access group classification and a version
3 field associated with the access group classification.

1 19. The apparatus of claim 18, wherein upon entering a new cell associated with
2 a second core network, the user equipment unit receives an access group eligibility
3 message transmitted for the new cell, the access group eligibility message transmitted
4 for the new cell including a version field associated with the contents of the access
5 group eligibility message transmitted for the new cell, and wherein the user equipment
6 unit determines, by comparing contents of the version field associated with the access
7 group classification and the version field associated with the access group eligibility

8 message transmitted for the new cell, whether the user equipment unit should update its
9 stored access group classification.

1 20. A telecommunications network comprising a core network node which,
2 upon request from a user equipment unit, classifies the user equipment unit in at least
3 one of plural access groups and generates for transmission to the user equipment unit
4 through a radio access network an access group classification message which advises
5 the user equipment unit as to which of the plural access groups the user equipment unit
6 belongs.

1 21. The apparatus of claim 20, wherein the access group classification message
2 indicates to which one(s) of plural subscriber groups the receiving user equipment unit
3 belongs.

1 22. The apparatus of claim 20, wherein the access group classification message
2 indicates to which one(s) of plural restriction groups the user equipment unit belongs.

1 23. The apparatus of claim 20, wherein the access group classification message
2 includes an access group classification in the form of a bitmap.

1 24. The apparatus of claim 20, wherein the core network node generates the
2 access group classification message upon receipt of a location update request from the
3 user equipment unit, and the access group classification message is one of a location
4 update response and a location update reject message generated by the core network
5 node which includes the access group classification.

1 25. The apparatus of claim 20, wherein the user equipment unit stores an access
2 group classification obtained from the access group classification message in a memory
3 at the user equipment unit.

1 26. The apparatus of claim 25, further comprising a radio access node of the
2 radio access network which transmits, in a broadcast channel over an air interface, an
3 access group eligibility message which enables the user equipment unit which receives
4 the access group eligibility message to ascertain, on a basis of access group to which

5 the user equipment unit belongs, whether the user equipment unit is eligible to operate
6 in a cell for which the access group eligibility message is transmitted.

1 27. The apparatus of claim 26, wherein the access group eligibility message
2 indicates what subscriber groups are eligible to operate in the cell for which the access
3 group eligibility message is transmitted.

1 28. The apparatus of claim 26, wherein the access group eligibility message
2 indicates what restriction groups are not eligible to operate in the cell for which the access
3 group eligibility message is transmitted.

1 29. The apparatus of claim 26, wherein the access group eligibility message
2 includes a bitmap which indicates eligibility for plural access groups.

1 30. The apparatus of claim 26, wherein the user equipment unit upon receiving
2 the access group eligibility message compares the stored access group classification
3 with contents of the access group eligibility message to determine whether the user
4 equipment unit is allowed access to the cell for which the access group eligibility
5 message is transmitted.

1 31. The apparatus of claim 30, wherein the access group eligibility message
2 includes a first bitmap which indicates eligibility for the plural access groups; wherein
3 the access group classification message includes a second bitmap which advises the
4 user equipment unit as to which of the plural access groups the user equipment unit
5 belongs.

1 32. The apparatus of claim 31, wherein the user equipment unit performs a
2 logical operation with respect to the first bitmap and the second bitmap to determine
3 whether the user equipment unit is allowed access to the cell for which the access group
4 eligibility message is transmitted.

1 33. The apparatus of claim 32, wherein the first bitmap indicates which of plural
2 subscriber groups are eligible and the second bitmap indicates to which one(s) of plural
3 subscriber groups the user equipment unit belongs, and wherein the logical operation is

4 a logical AND operation between corresponding bit positions of the first bitmap and the
5 second bitmap.

1 34. The apparatus of claim 32, wherein the first bitmap indicates which of plural
2 restriction groups are ineligible and the second bitmap indicates to which one(s) of
3 plural restriction groups the user equipment unit belongs, and wherein the logical
4 operation is a logical AND operation between corresponding bit positions of the first
5 bitmap and the second bitmap.

1 35. The apparatus of claim 20, wherein the user equipment unit is in one of an
2 IDLE mode and one of the following states of a CONNECTED mode: CELL_FACH
3 state; CELL_PCH state; and URA_PCH state.

1 36. The apparatus of claim 26, wherein upon entering a new cell which involves
2 a transition to a new location area, the user equipment unit checks the access group
3 eligibility message transmitted for the new cell in order to compare the stored access
4 group classification with contents of the access group eligibility message to determine
5 whether the user equipment unit is allowed access to the new cell.

1 37. The apparatus of claim 36, wherein upon entering a new cell which does not
2 involve a transition to a new location area, the user equipment unit need not check the
3 access group eligibility message to determine whether the user equipment unit is
4 allowed access to the new cell.

1 38. The apparatus of claim 20, wherein the access group classification message
2 includes an access group classification and a version field associated with the access
3 group classification.

1 39. The apparatus of claim 38, wherein upon receiving a subsequent core
2 network message, the subsequent core network message including a potentially revised
3 access group classification and a version field associated with the access group
4 classification carried by the subsequent core network message, the user equipment unit
5 determines, by comparing contents of the version field associated with the access group
6 classification and the version field associated with the access group classification

7 carried by the subsequent core network message, whether the user equipment unit
8 should update its stored access group classification.

1 40. The apparatus of claim 26, wherein the access group classification message
2 generated by the core network includes the access group classification and a version
3 field associated with the access group classification.

1 41. The apparatus of claim 40, wherein upon entering a new cell associated with
2 a second core network, the user equipment unit receives an access group eligibility
3 message transmitted for the new cell, the access group eligibility message transmitted
4 for the new cell including a version field associated with the contents of the access
5 group eligibility message transmitted for the new cell, and wherein the user equipment
6 unit determines, by comparing contents of the version field associated with the access
7 group classification and the version field associated with the access group eligibility
8 message transmitted for the new cell, whether the user equipment unit should update its
9 stored access group classification.

1 42. A user equipment unit which receives over an air interface an access group
2 classification message and an access group eligibility message, the access group
3 classification message being generated by a core network node for advising the user
4 equipment unit as to which of the plural access groups the user equipment unit belongs,
5 the access group eligibility message being generated by a radio access network node for
6 specifying eligibility of plural access groups to operate in a cell for which the access
7 group eligibility message is transmitted, the user equipment unit comprising:

8 an access controller which stores an access group classification obtained from
9 the access group eligibility message and which compares the stored access group
10 classification with contents of the access group eligibility message to determine
11 whether the user equipment unit is allowed access to the cell for which the access group
12 eligibility message is transmitted.

1 43. The apparatus of claim 42, wherein the access group eligibility message
2 indicates what subscriber groups are eligible to operate in the cell for which the access
3 group eligibility message is transmitted.

1 44. The apparatus of claim 42, wherein the access group eligibility message
2 indicates what restriction groups are not eligible to operate in the cell for which the
3 access group eligibility message is transmitted.

1 45. The apparatus of claim 42, wherein the access group eligibility message
2 includes a bitmap which indicates eligibility for plural access groups.

1 46. The apparatus of claim 45, wherein the access group eligibility message
2 includes a first bitmap which indicates eligibility for the plural access groups; wherein
3 the access group classification message includes a second bitmap which advises the
4 user equipment unit as to which of the plural access groups the user equipment unit
5 belongs.

1 47. The apparatus of claim 46, wherein the user equipment unit performs a
2 logical operation with respect to the first bitmap and the second bitmap to determine
3 whether the user equipment unit is allowed access to the cell for which the access group
4 eligibility message is transmitted.

1 48. The apparatus of claim 47, wherein the first bitmap indicates which of plural
2 subscriber groups are eligible and the second bitmap indicates to which one(s) of plural
3 subscriber groups the user equipment unit belongs, and wherein the logical operation is
4 a logical AND operation between corresponding bit positions of the first bitmap and the
5 second bitmap.

1 49. The apparatus of claim 47, wherein the first bitmap indicates which of plural
2 restriction groups are ineligible and the second bitmap indicates to which one(s) of
3 plural restriction groups the user equipment unit belongs, and wherein the logical
4 operation is a logical AND operation between corresponding bit positions of the first
5 bitmap and the second bitmap.

1 50. The apparatus of claim 42, wherein the access group classification message
2 is one of a location update response and a location update reject message which
3 includes the access group classification.

1 51. The apparatus of claim 42, wherein the access group classification message
2 includes the access group classification and a version field associated with the access
3 group classification.

1 52. The apparatus of claim 51, wherein upon receiving a subsequent core
2 network message, the subsequent core network message including a potentially revised
3 access group classification and a version field associated with the access group
4 classification carried by the subsequent core network message, the access controller
5 determines, by comparing contents of the version field associated with the access group
6 classification and the version field associated with the access group classification
7 carried by the subsequent core network message, whether the user equipment unit
8 should update its stored access group classification.

1 53. The apparatus of claim 51, wherein upon entering a new cell associated with
2 a second core network, the user equipment unit receives an access group eligibility
3 message transmitted for the new cell, the access group eligibility message transmitted
4 for the new cell including a version field associated with the contents of the access
5 group eligibility message transmitted for the new cell, and wherein the access controller
6 determines, by comparing contents of the version field associated with the access group
7 classification and the version field associated with the access group eligibility message
8 transmitted for the new cell, whether the user equipment unit should update its stored
9 access group classification.

1 54. A method of operating a telecommunications network comprising:
2 transmitting, in a broadcast channel over an air interface, an access group
3 eligibility message;
4 a user equipment unit receives the access group eligibility message and using the
5 access group eligibility message to ascertain, on a basis of access group to which the
6 user equipment unit belongs, whether the user equipment unit is eligible to operate in a
7 cell for which the access group eligibility message is transmitted.

1 55. The method of claim 54, further comprising including in the access group
2 eligibility message an indication of what subscriber groups are eligible to operate in the
3 cell for which the access group eligibility message is transmitted.

1 56. The method of claim 54, further comprising including in the access group
2 eligibility message an indication of what restriction groups are not eligible to operate in
3 the cell for which the access group eligibility message is transmitted.

1 57. The method of claim 54, further comprising including in the access group
2 eligibility message a bitmap which indicates eligibility for plural access groups.

1 58. The method of claim 54, further comprising:
2 using a radio access network node to transmit the access group eligibility
3 message;

4 at a core network node and upon receipt of a location update request for the user
5 equipment unit, classifying the user equipment unit in at least one of plural access
6 groups;

7 generating, for transmission to the user equipment unit through a radio access
8 network, an access group classification message which advises the user equipment unit
9 as to which of the plural access groups the user equipment unit belongs.

1 59. The method of claim 58, further comprising storing in a memory at the user
2 equipment unit an access group classification obtained from the access group
3 classification message.

1 60. The method of claim 59, further comprising the user equipment unit, upon
2 receiving the access group eligibility message, comparing the stored access group
3 classification with contents of the access group eligibility message to determine
4 whether the user equipment unit is allowed access to the cell for which the access group
5 eligibility message is transmitted.

1 61. The method of claim 60, further comprising:
2 including in the access group eligibility message a first bitmap which indicates
3 eligibility for the plural access groups; and
4 including in the access group classification message a second bitmap which
5 advises the user equipment unit as to which of the plural access groups the user
6 equipment unit belongs.

1 62. The method of claim 61, further comprising performing a logical operation
2 with respect to the first bitmap and the second bitmap to determine whether the user
3 equipment unit is allowed access to the cell for which the access group eligibility
4 message is transmitted.

1 63. The method of claim 62, wherein the first bitmap indicates which of plural
2 subscriber groups are eligible and the second bitmap indicates to which one(s) of plural
3 subscriber groups the user equipment unit belongs, and wherein the logical operation is
4 a logical AND operation between corresponding bit positions of the first bitmap and the
5 second bitmap.

1 64. The method of claim 62, wherein the first bitmap indicates which of plural
2 restriction groups are ineligible and the second bitmap indicates to which one(s) of
3 plural restriction groups the user equipment unit belongs, and wherein the logical
4 operation is a logical AND operation between corresponding bit positions of the first
5 bitmap and the second bitmap.

1 65. The method of claim 54, wherein the user equipment unit is in one of an
2 IDLE mode and one of the following states of a CONNECTED mode: CELL_FACH
3 state; CELL_PCH state; and URA_PCH state.

1 66. The method of claim 54, further comprising:

2 upon the user equipment unit entering a new cell which involves a transition to a
3 new location area, checking the access group eligibility message transmitted for the
4 new cell; and
5 comparing the stored access group classification with contents of the access
6 group eligibility message to determine whether the user equipment unit is allowed
7 access to the new cell.

1 67. The method of claim 66, further comprising, upon the user equipment unit
2 entering a new cell which does not involve a transition to a new location area, the user
3 equipment unit not checking the access group eligibility message.

1 68. The method of claim 54, wherein the access group classification message is
2 one of a location update response and a location update reject message which includes
3 the access group classification.

1 69. The method of claim 54, further comprising including in the access group
2 classification message the access group classification and a version field associated
3 with the access group classification.

1 70. The method of claim 69, further comprising:

2 the user equipment unit receiving a subsequent core network message in the
3 form of one of a location update response or location update reject message, the
4 subsequent core network message including a potentially revised access group
5 classification and a version field associated with the access group classification carried
6 by the subsequent core network message;

7 the user equipment unit determining, by comparing contents of the version field
8 associated with the access group classification and the version field associated with the
9 access group classification carried by the subsequent core network message, whether
10 the user equipment unit should update its stored access group classification.

1 71. The method of claim 54, wherein the access group classification message
2 generated by the core network includes the access group classification and a version
3 field associated with the access group classification.

1 72. The method of claim 71, further comprising upon the user equipment unit
2 entering a new cell associated with a second core network:

3 the user equipment unit receiving an access group eligibility message transmitted
4 for the new cell, the access group eligibility message transmitted for the new cell
5 including a version field associated with the contents of the access group eligibility
6 message transmitted for the new cell; and

7 the user equipment unit determining, by comparing contents of the version field
8 associated with the access group classification and the version field associated with the
9 access group eligibility message transmitted for the new cell, whether the user
10 equipment unit should update its stored access group classification.

1 73. A method of operating a telecommunications network comprising:

2 at a core network node and upon request from a user equipment unit, classifying
3 the user equipment unit in at least one of plural access groups;

4 generating, for transmission to the user equipment unit through a radio access
5 network, an access group classification message which advises the user equipment unit
6 as to which of the plural access groups the user equipment unit belongs.

1 74. The method of claim 73, further comprising including in the access group
2 classification message an indication as to which one(s) of plural subscriber groups the
3 receiving user equipment unit belongs.

1 75. The method of claim 73, further comprising including in the access group
2 classification message an indication as to which one(s) of plural restriction groups the
3 user equipment unit belongs.

1 76. The method of claim 73, further comprising including in the access group
2 classification message an access group classification in the form of a bitmap.

1 77. The method of claim 73, further comprising using the core network node to
2 generate the access group classification message upon receipt of a location update
3 request from the user equipment unit, the access group classification message being one
4 of a location update response and a location update reject message generated by the
5 core network node which includes the access group classification.

1 78. The method of claim 73, further comprising storing in a memory at the user
2 equipment unit an access group classification obtained from the access group
3 classification message.

1 79. The method of claim 78, further comprising:
2 transmitting, from a radio access node of the radio access network and in a
3 broadcast channel over an air interface, an access group eligibility message; and
4 using the access group eligibility message at the user equipment unit to
5 ascertain, on a basis of access group to which the user equipment unit belongs, whether
6 the user equipment unit is eligible to operate in a cell for which the access group
7 eligibility message is transmitted.

1 80. The method of claim 79, further comprising including in the access group
2 eligibility message an indication of what subscriber groups are eligible to operate in the
3 cell for which the access group eligibility message is transmitted.

1 81. The method of claim 79, further comprising including in the access group
2 eligibility message an indication of what restriction groups are not eligible to operate in
3 the cell for which the access group eligibility message is transmitted.

1 82. The method of claim 79, further comprising including in the access group
2 eligibility message a bitmap which indicates eligibility for plural access groups.

1 83. The method of claim 79, further comprising the user equipment unit, upon
2 receiving the access group eligibility message, comparing the stored access group
3 classification with contents of the access group eligibility message to determine
4 whether the user equipment unit is allowed access to the cell for which the access group
5 eligibility message is transmitted.

1 84. The method of claim 83, further comprising:
2 including in the access group eligibility message a first bitmap which indicates
3 eligibility for the plural access groups; and
4 including in the access group classification message a second bitmap which
5 advises the user equipment unit as to which of the plural access groups the user
6 equipment unit belongs.

1 85. The method of claim 84, further comprising performing a logical operation
2 with respect to the first bitmap and the second bitmap to determine whether the user
3 equipment unit is allowed access to the cell for which the access group eligibility
4 message is transmitted.

1 86. The method of claim 85, wherein the first bitmap indicates which of plural
2 subscriber groups are eligible and the second bitmap indicates to which one(s) of plural
3 subscriber groups the user equipment unit belongs, and wherein the logical operation is
4 a logical AND operation between corresponding bit positions of the first bitmap and the
5 second bitmap.

1 87. The method of claim 85, wherein the first bitmap indicates which of plural
2 restriction groups are ineligible and the second bitmap indicates to which one(s) of
3 plural restriction groups the user equipment unit belongs, and wherein the logical
4 operation is a logical AND operation between corresponding bit positions of the first
5 bitmap and the second bitmap.

1 88. The method of claim 78, further comprising the user equipment unit being in
2 one of an IDLE mode and one of the following states of a CONNECTED mode:
3 CELL_FACH state; CELL_PCH state; and URA_PCH state.

1 89. The method of claim 78, further comprising, upon the user equipment unit
2 entering a new cell which involves a transition to a new location area, the user
3 equipment unit checking the access group eligibility message transmitted for the new
4 cell in order to compare the stored access group classification with contents of the
5 access group eligibility message to determine whether the user equipment unit is
6 allowed access to the new cell.

1 90. The method of claim 89, further comprising, upon the user equipment unit
2 entering a new cell which does not involve a transition to a new location area, the user
3 equipment unit not checking the access group eligibility message to determine whether
4 the user equipment unit is allowed access to the new cell.

1 91. The method of claim 78, further comprising including in the access group
2 classification message an access group classification and a version field associated with
3 the access group classification.

1 92. The method of claim 78, further comprising:
2 the user equipment unit receiving a subsequent core network message, the
3 subsequent core network message including a potentially revised access group
4 classification and a version field associated with the access group classification carried
5 by the subsequent core network message;
6 the user equipment unit determining, by comparing contents of the version field
7 associated with the access group classification and the version field associated with the
8 access group classification carried by the subsequent core network message, whether
9 the user equipment unit should update its stored access group classification.

1 93. The method of claim 78, further comprising including in the access group
2 classification message generated by the core network the access group classification
3 and a version field associated with the access group classification.

1 94. The method of claim 93, further comprising, upon the user equipment unit
2 entering a new cell associated with a second core network:

3 the user equipment unit receiving an access group eligibility message transmitted
4 for the new cell, the access group eligibility message transmitted for the new cell
5 including a version field associated with the contents of the access group eligibility
6 message transmitted for the new cell;

7 the user equipment unit determining, by comparing contents of the version field
8 associated with the access group classification and the version field associated with the
9 access group eligibility message transmitted for the new cell, whether the user
10 equipment unit should update its stored access group classification.